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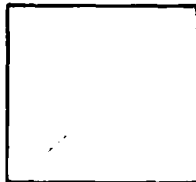
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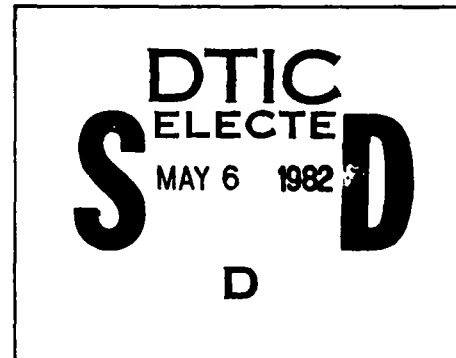
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LASER PROPAGATION RESEARCH

VOLUME II
GASEOUS AND PARTICULATE CHARACTERIZATION
OF THE ATMOSPHERE

Appendices A-3, A-4, A-5

Wayne L. Flowers

Prepared for
Atmospheric Sciences Laboratory
White Sands Missile Range, New Mexico

Contract DAAD07-80-C-0056

November 1980

OptiMetrics, Inc.

2000 Hogback Rd., Suite 3
Ann Arbor, MI 48104

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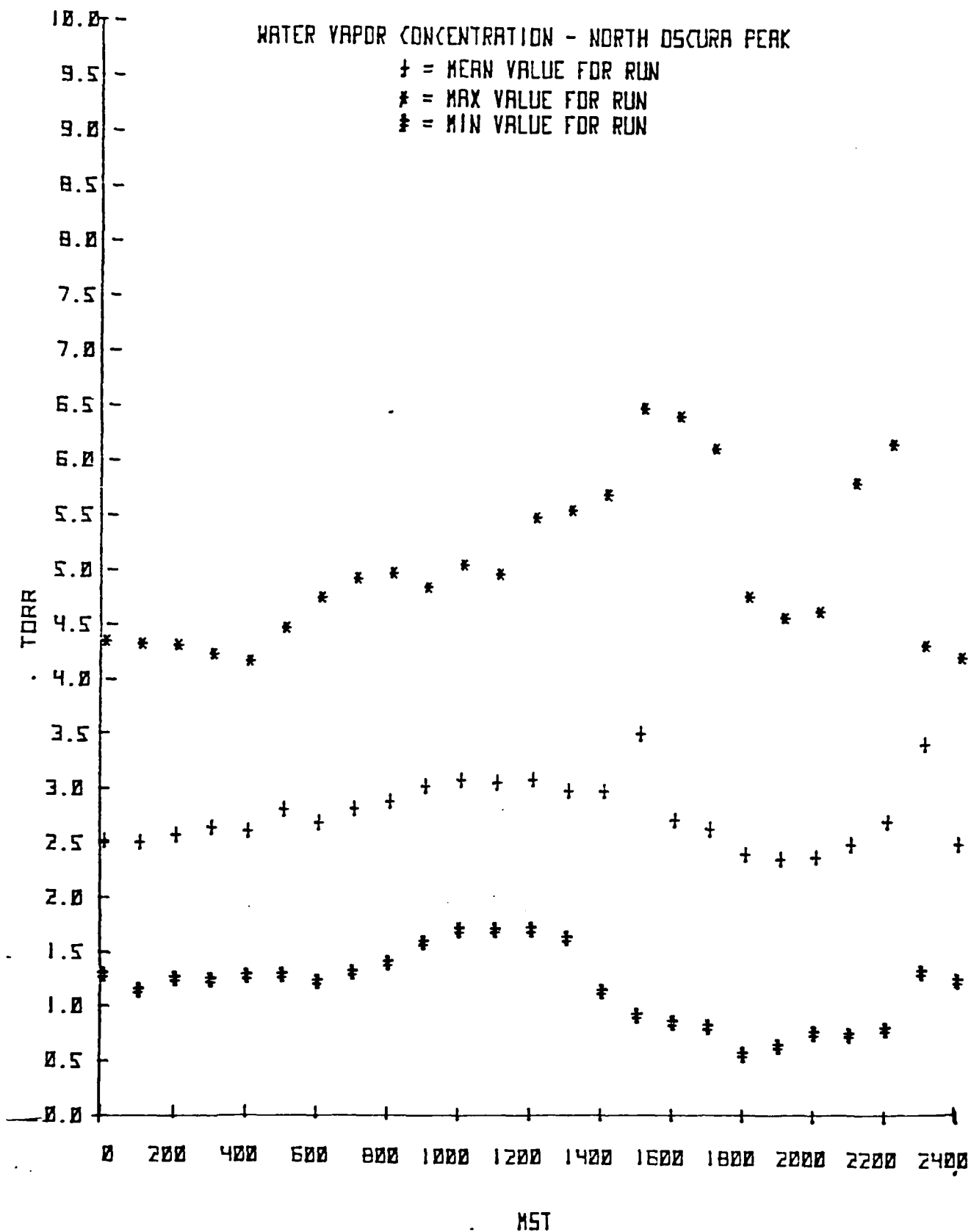


FIGURE A-3.129

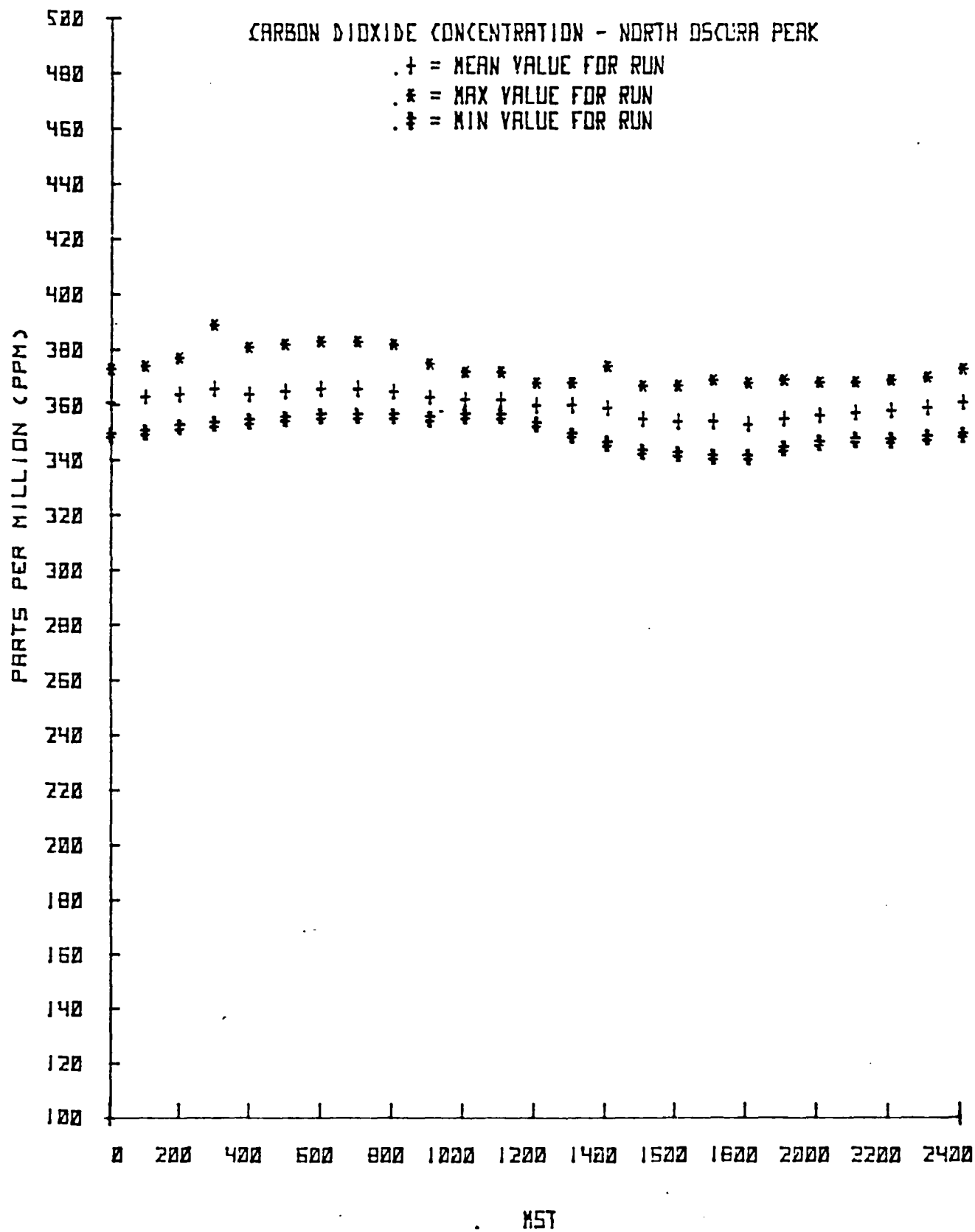


FIGURE A-1.130

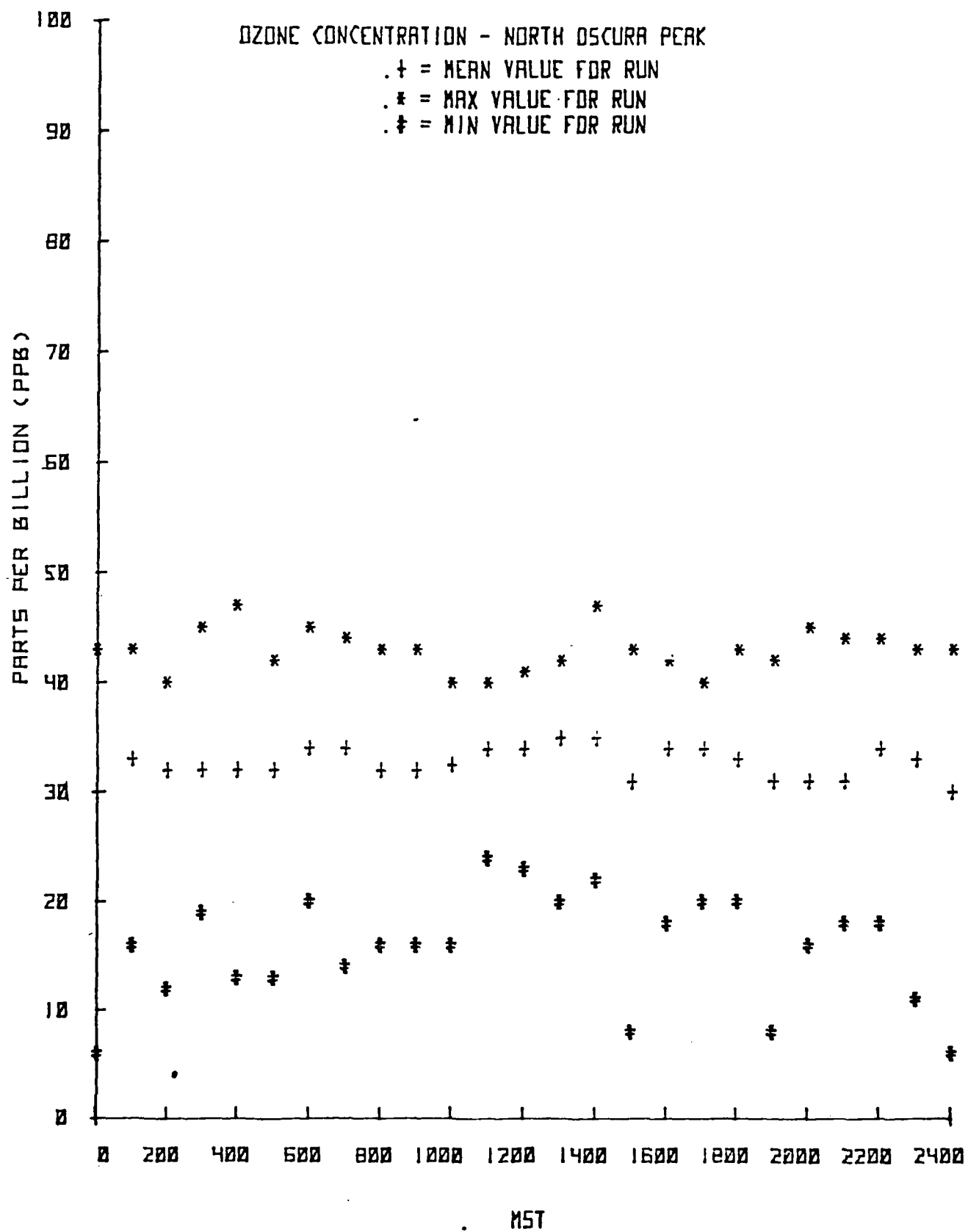


FIGURE A-3.131

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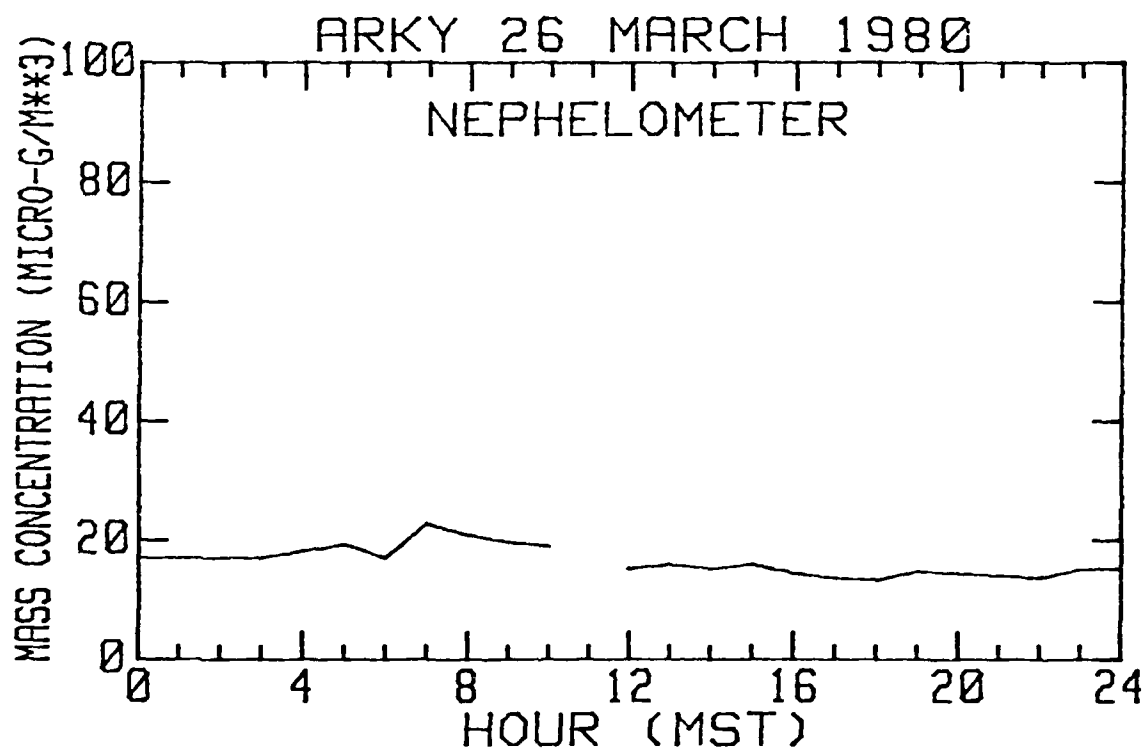


FIGURE A-4.132

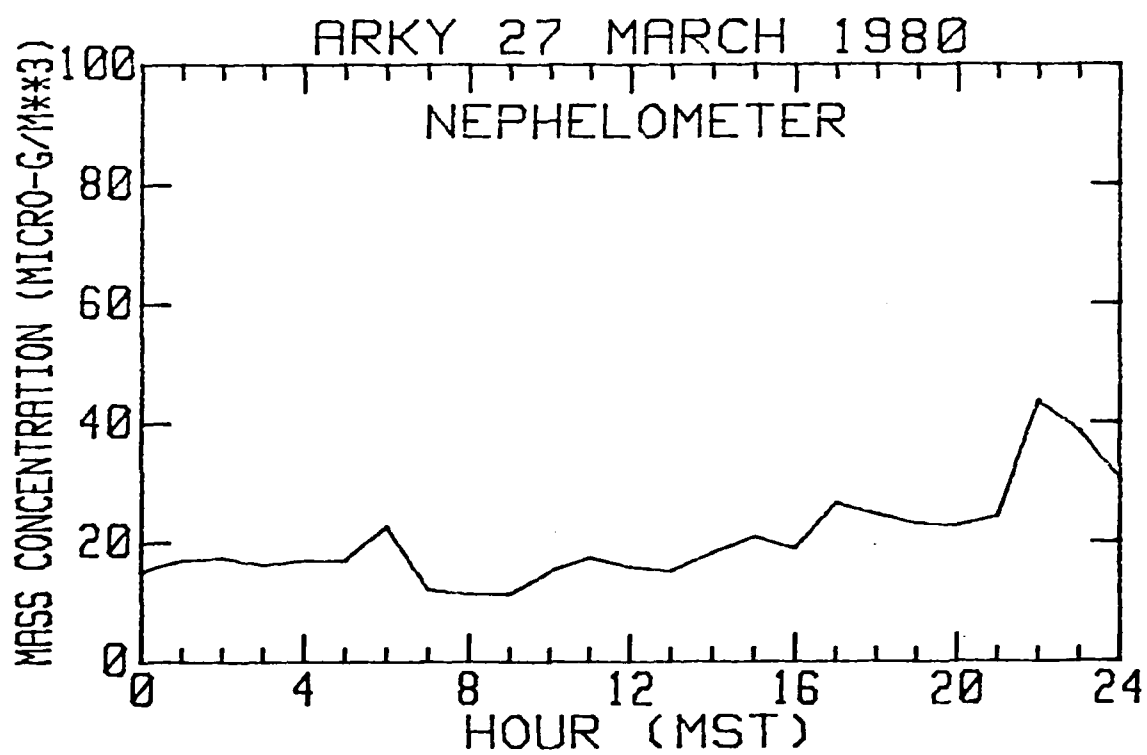


FIGURE A-4.133

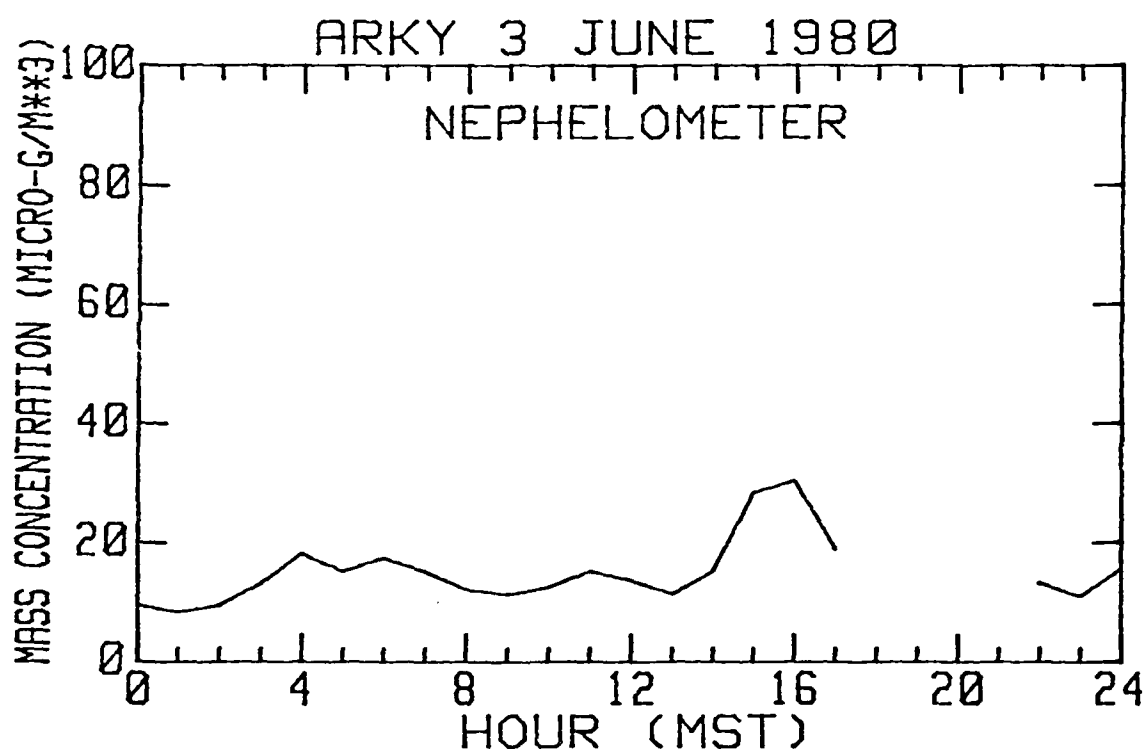


FIGURE A-4.134

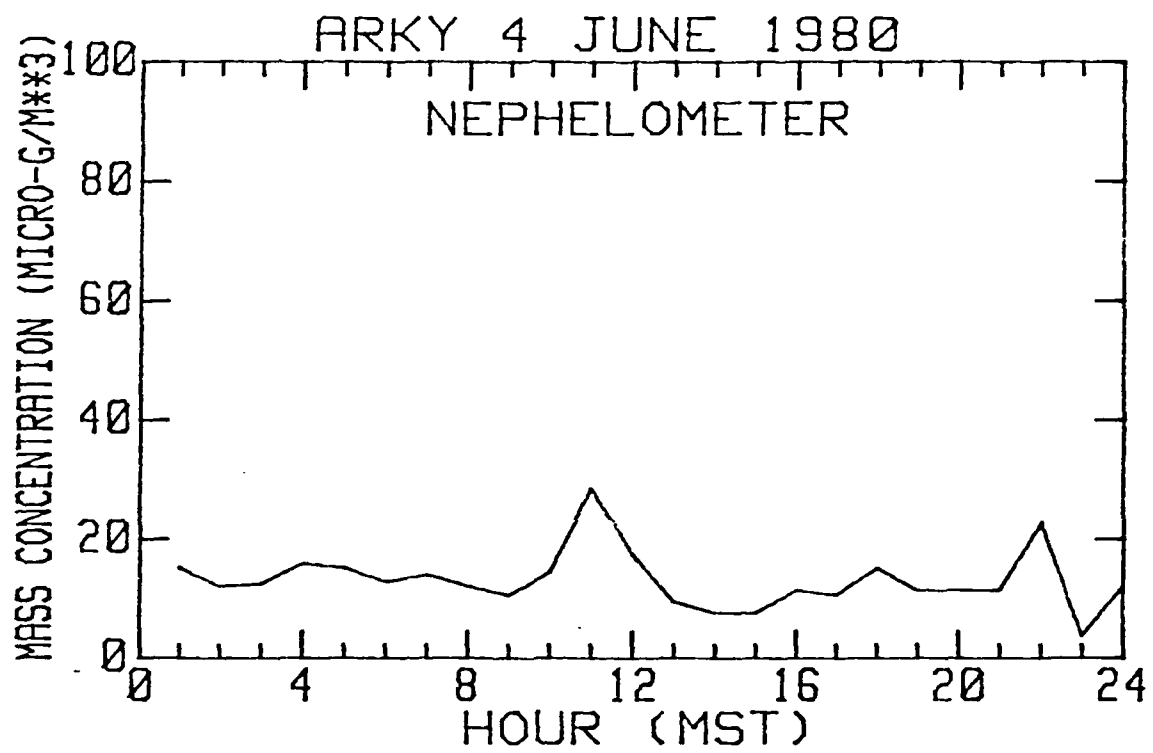


FIGURE A-4.135

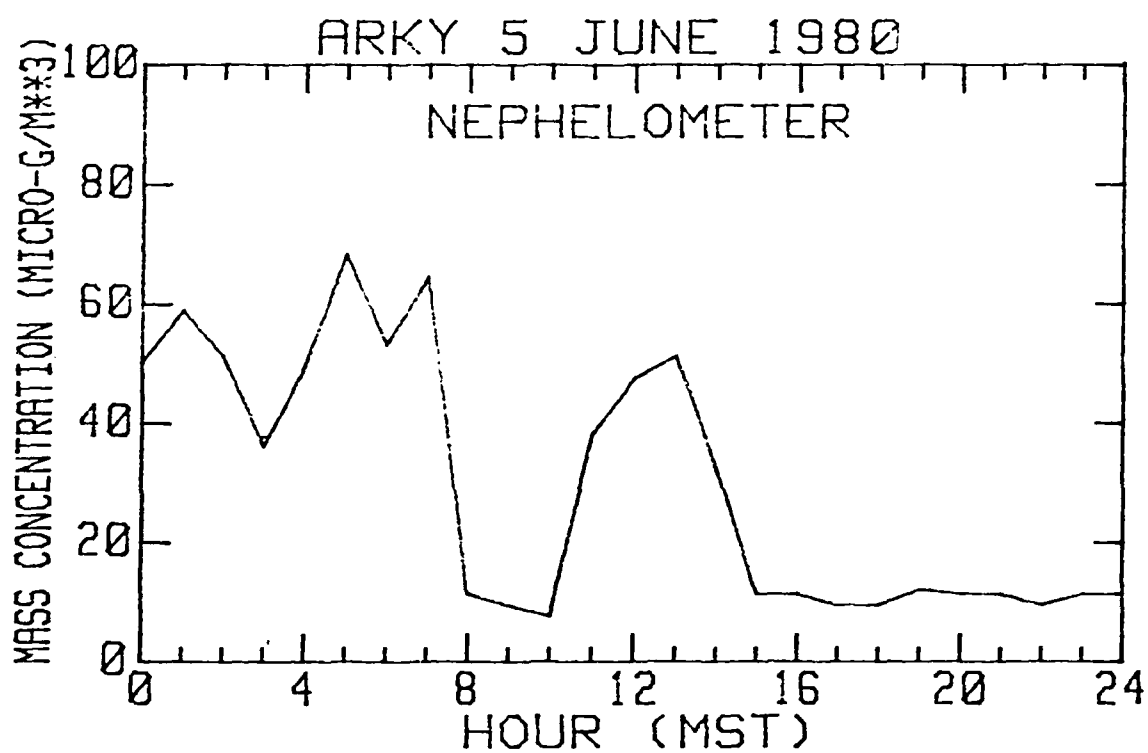


FIGURE A-4.136

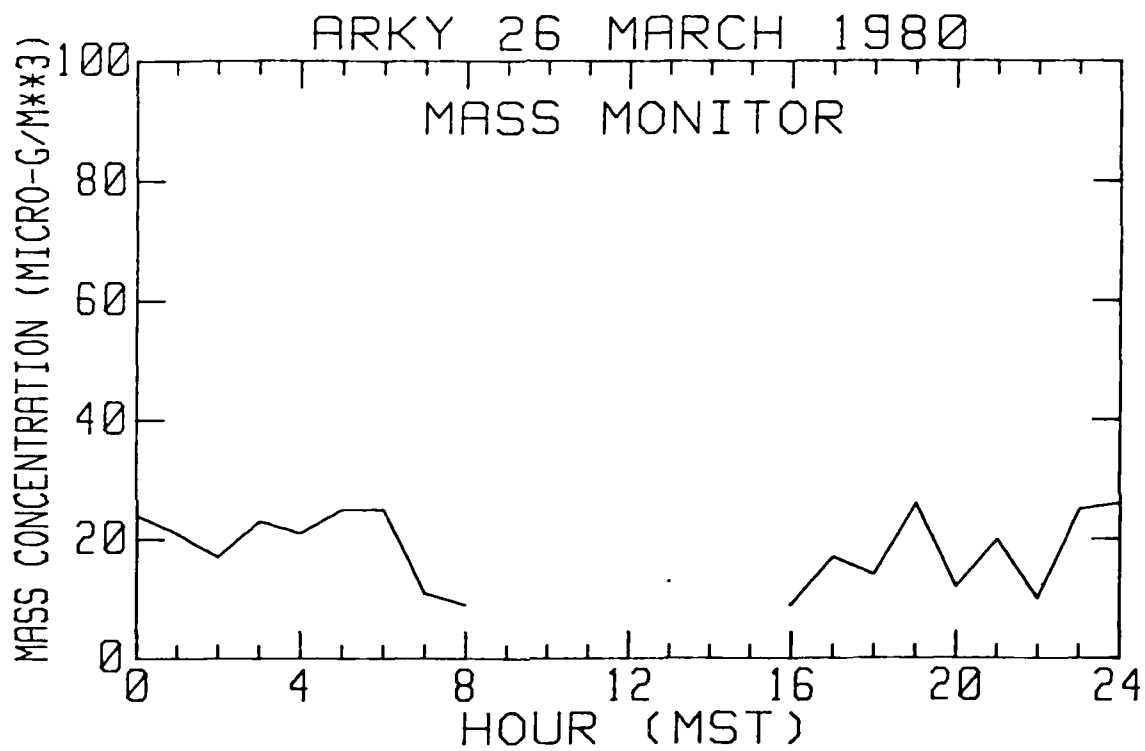


FIGURE A-4.137

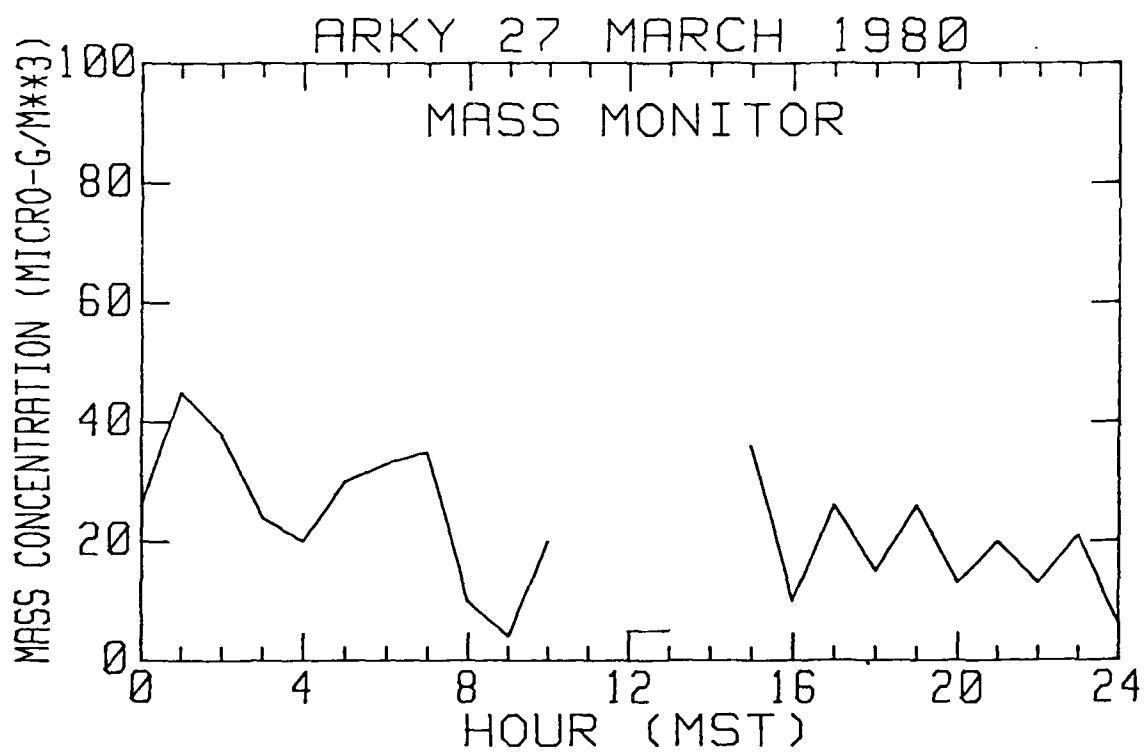


FIGURE A-4.138

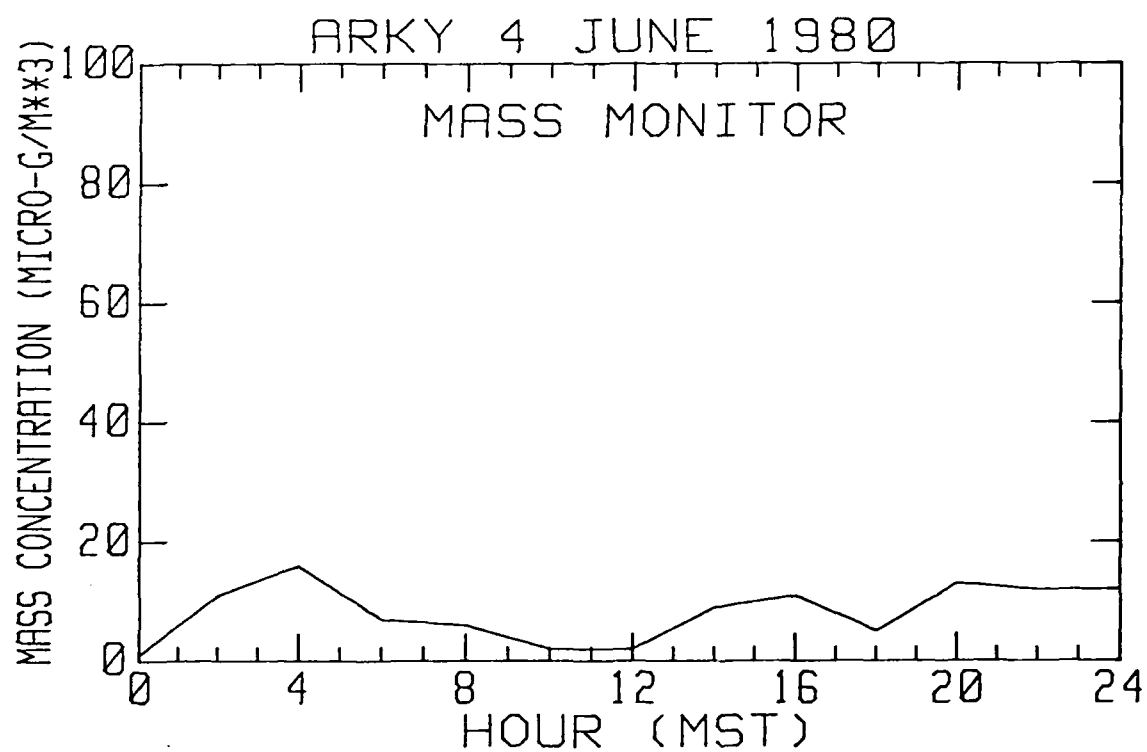


FIGURE A-4.139

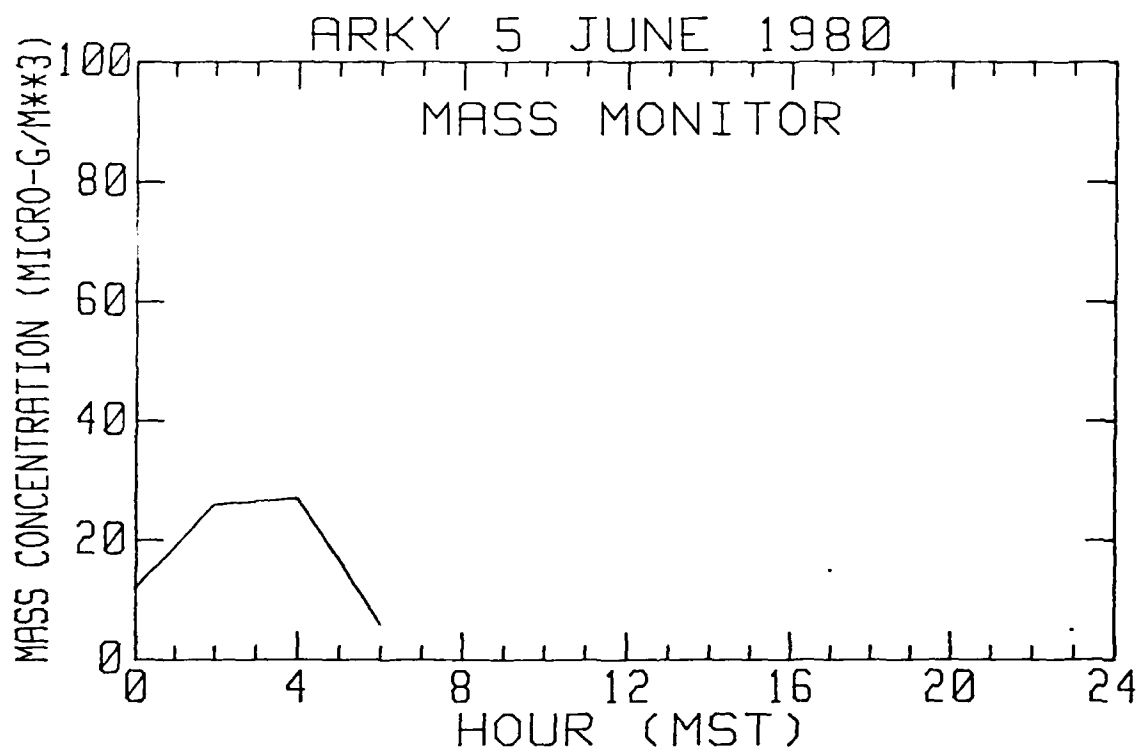


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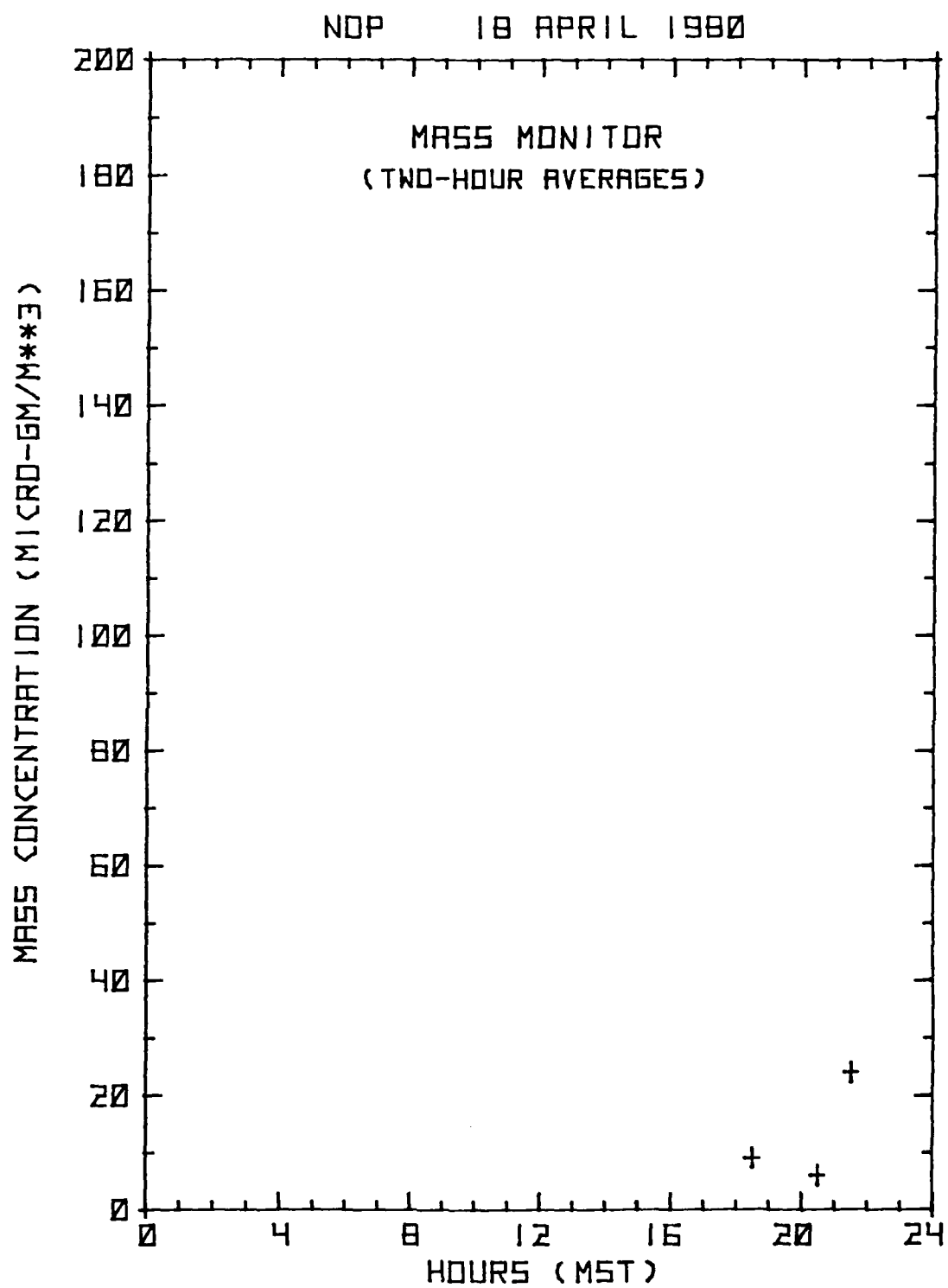


FIGURE A-5.141

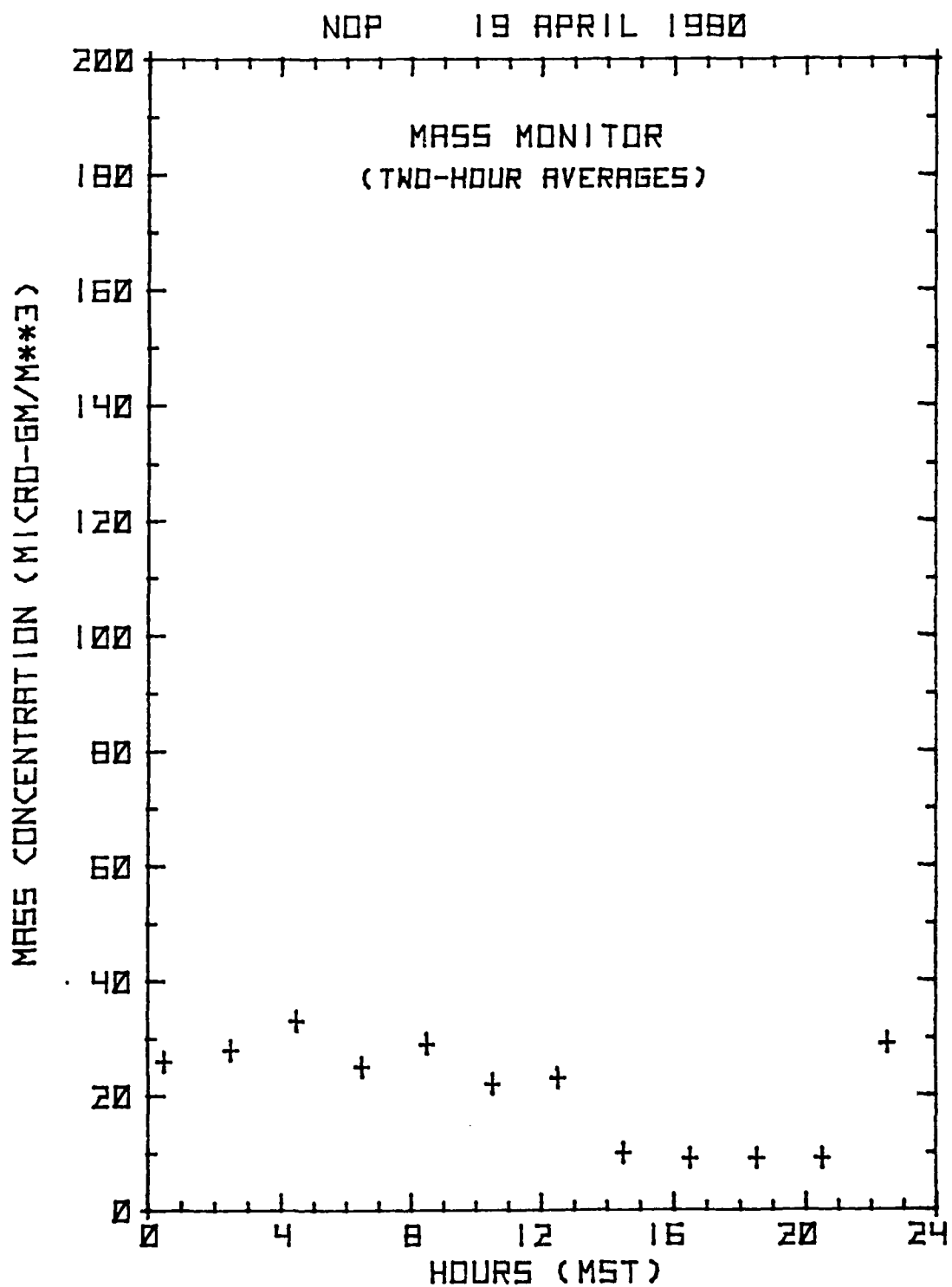


FIGURE A-5.142

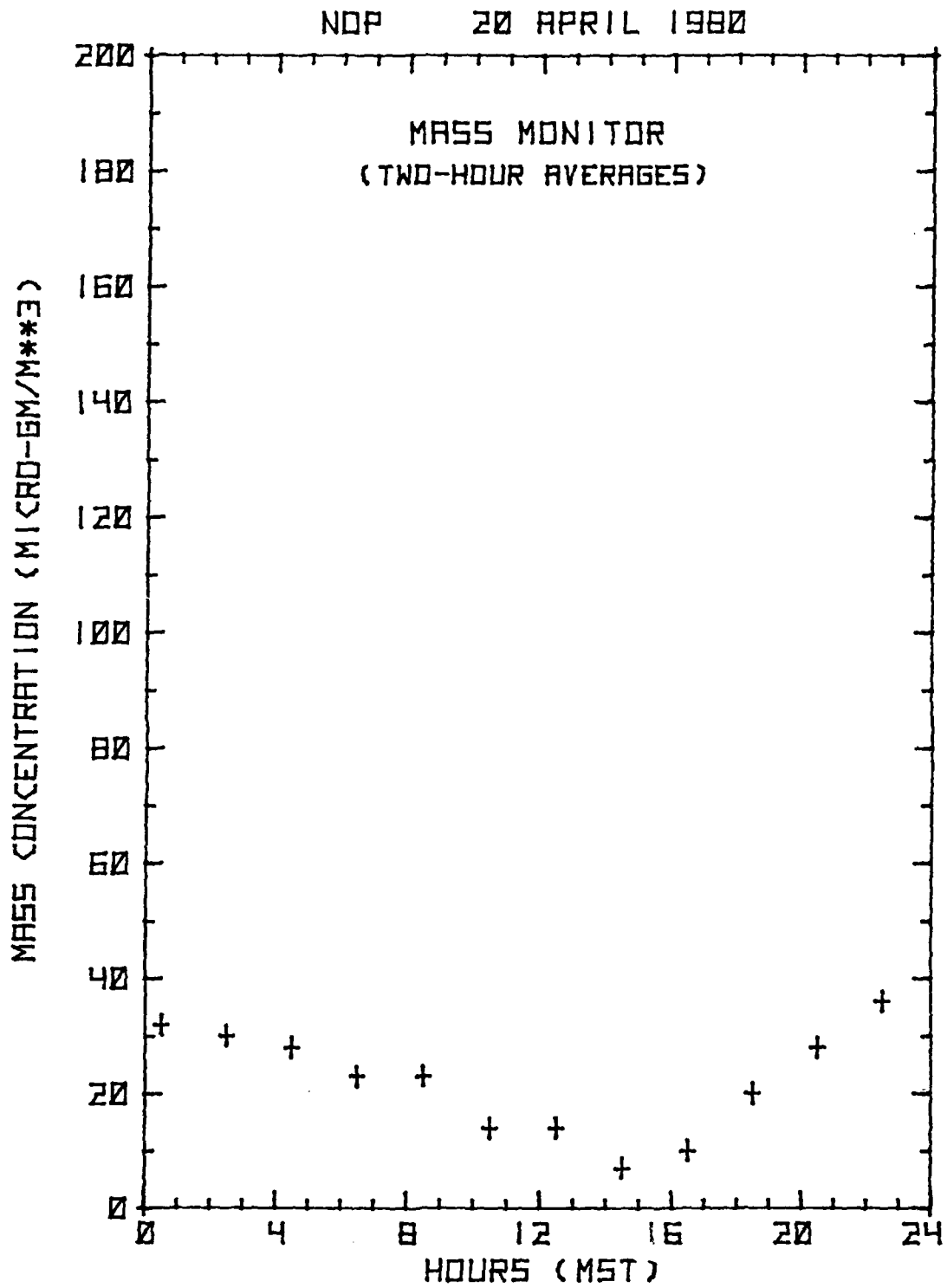


FIGURE A-5.143

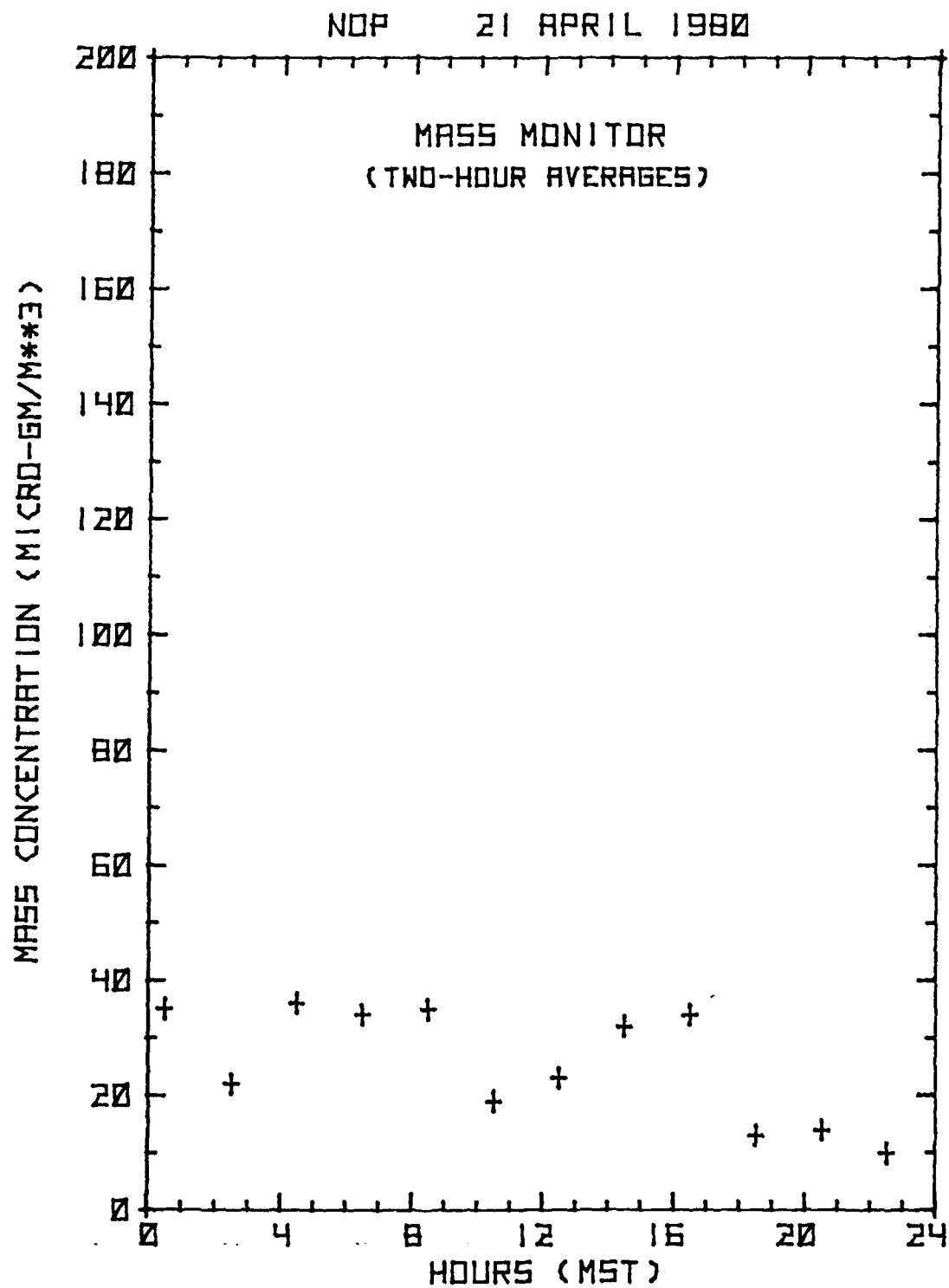


FIGURE A-5.144

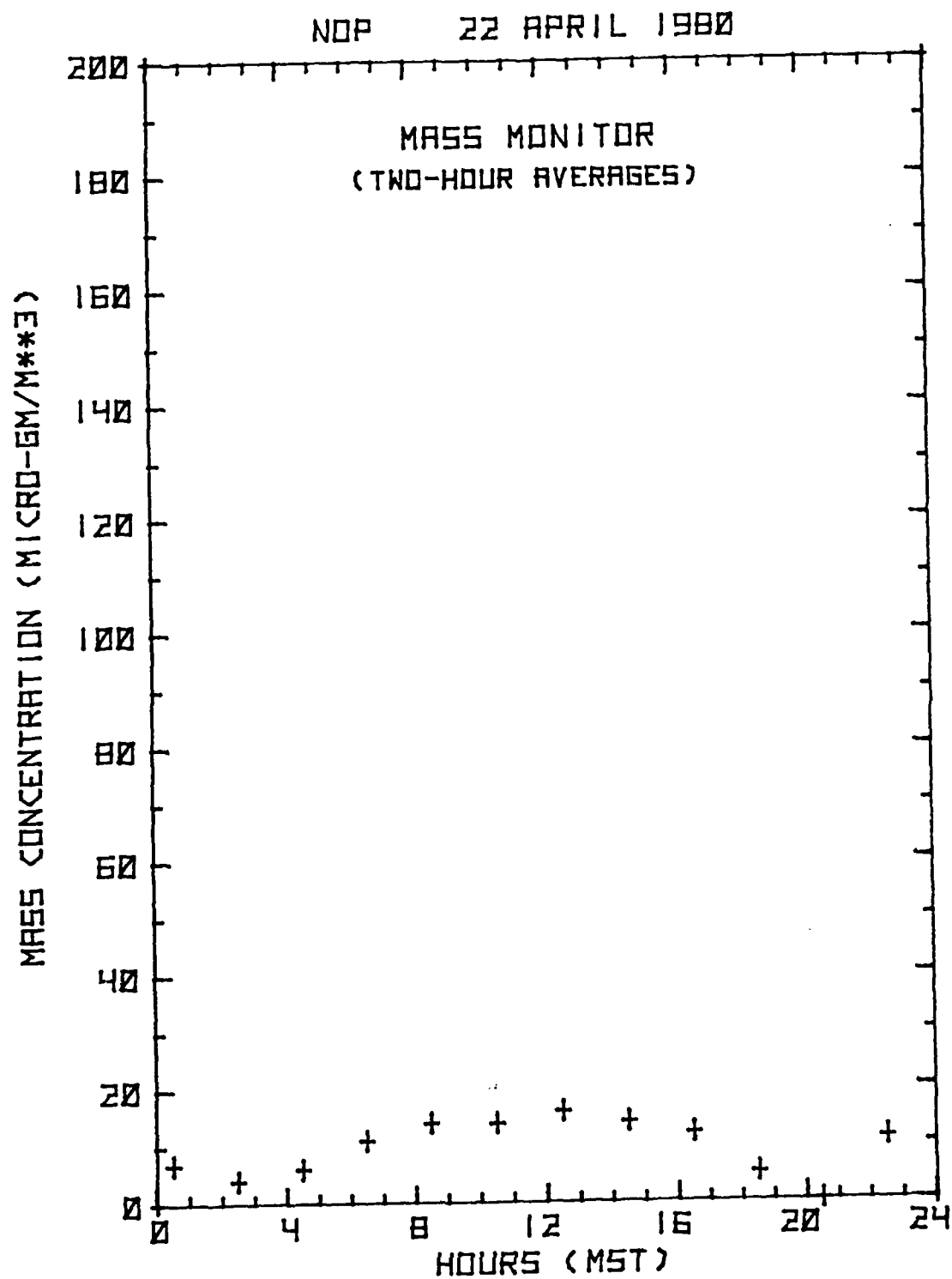


FIGURE A-5.145

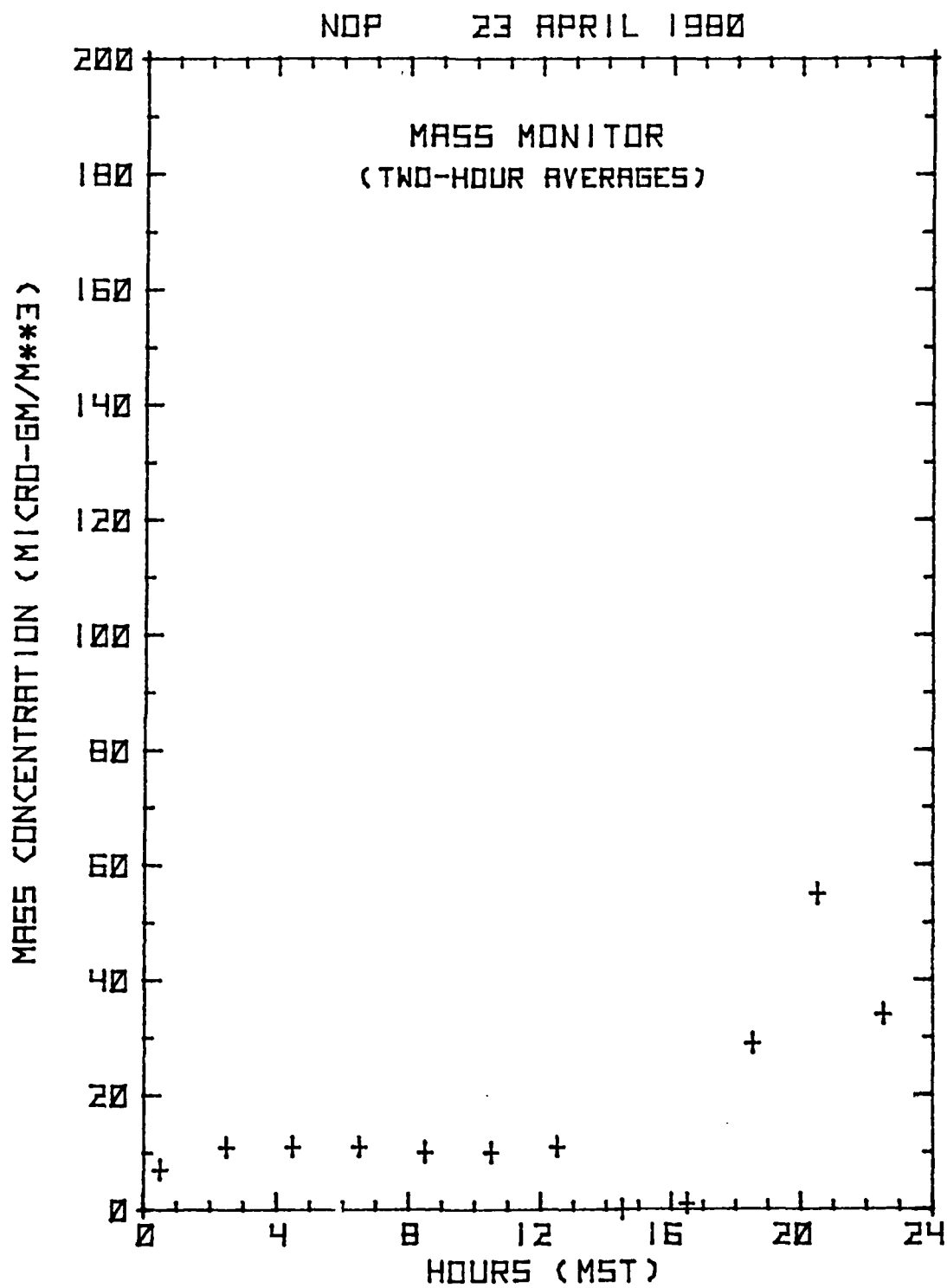


FIGURE A-5.146

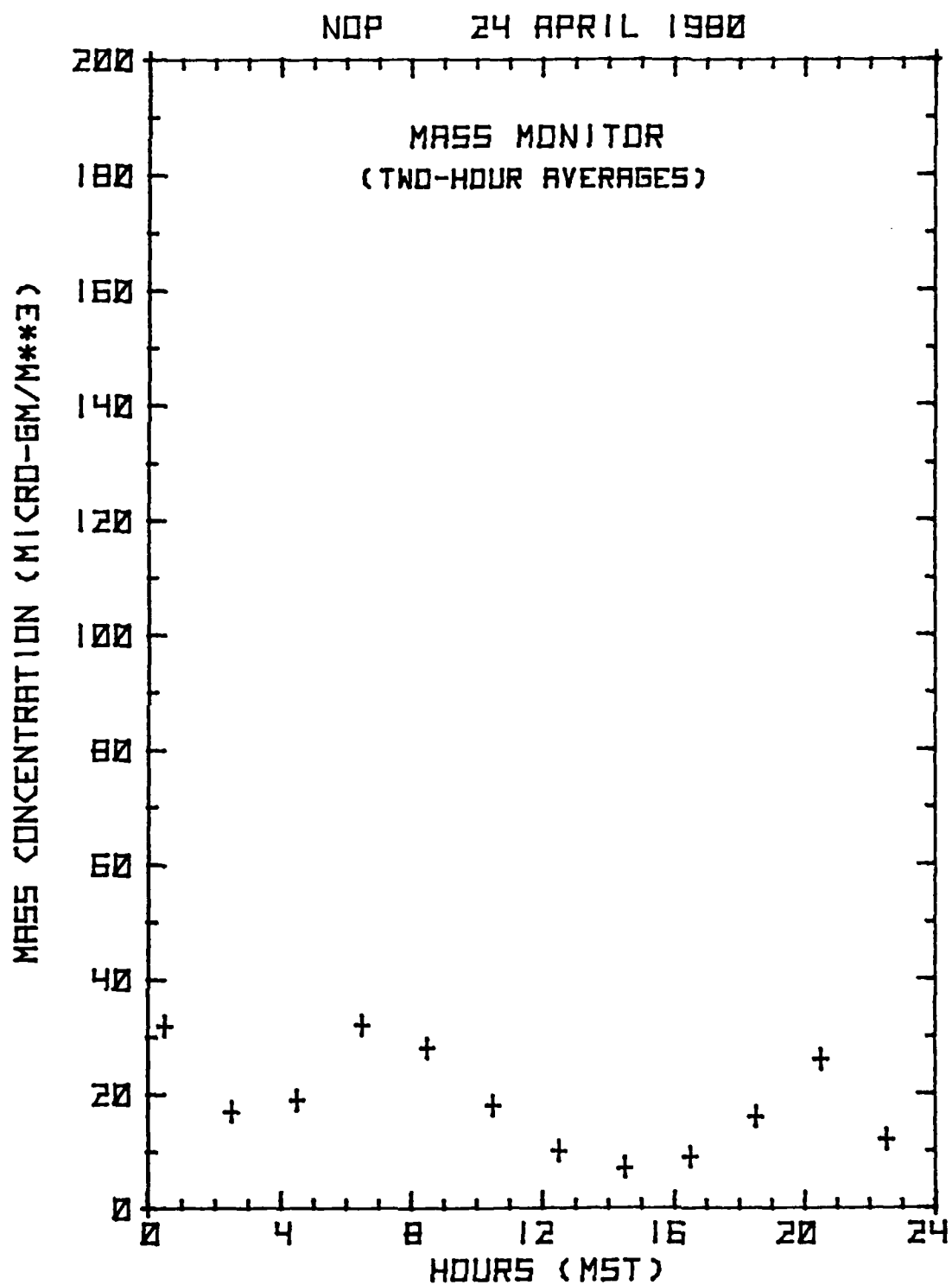


FIGURE A-5.147

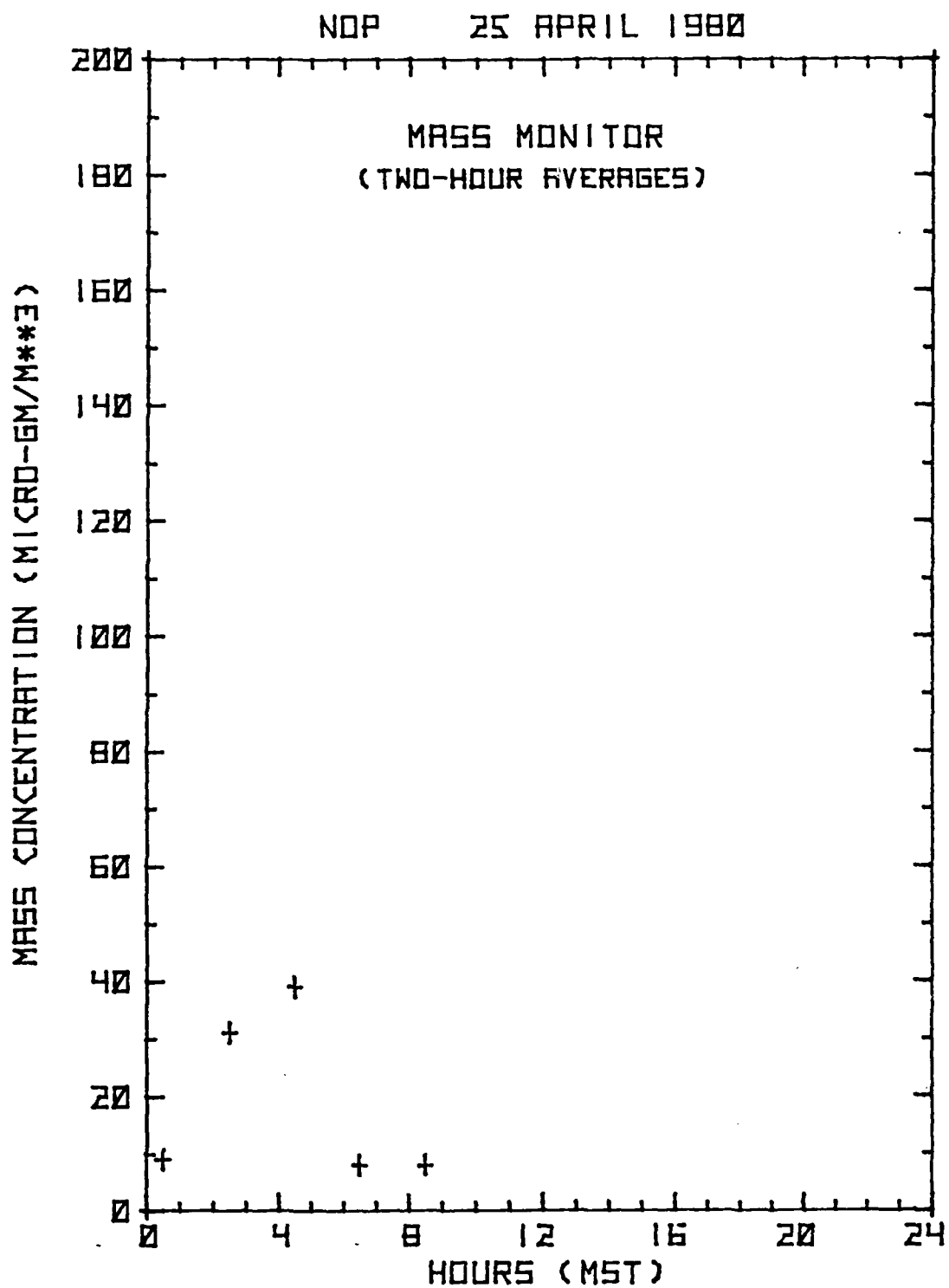


FIGURE A-5.148

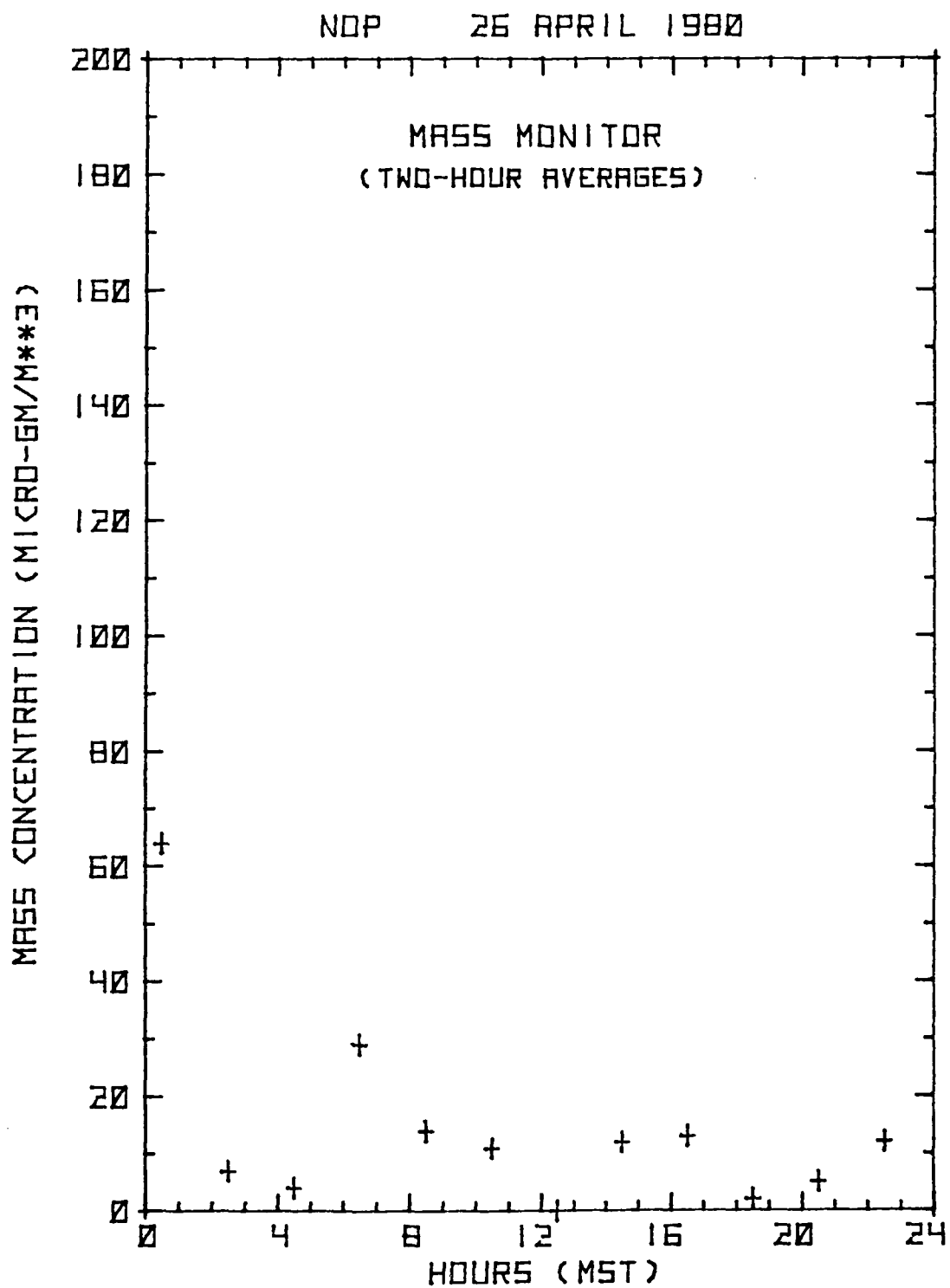


FIGURE A-5.149

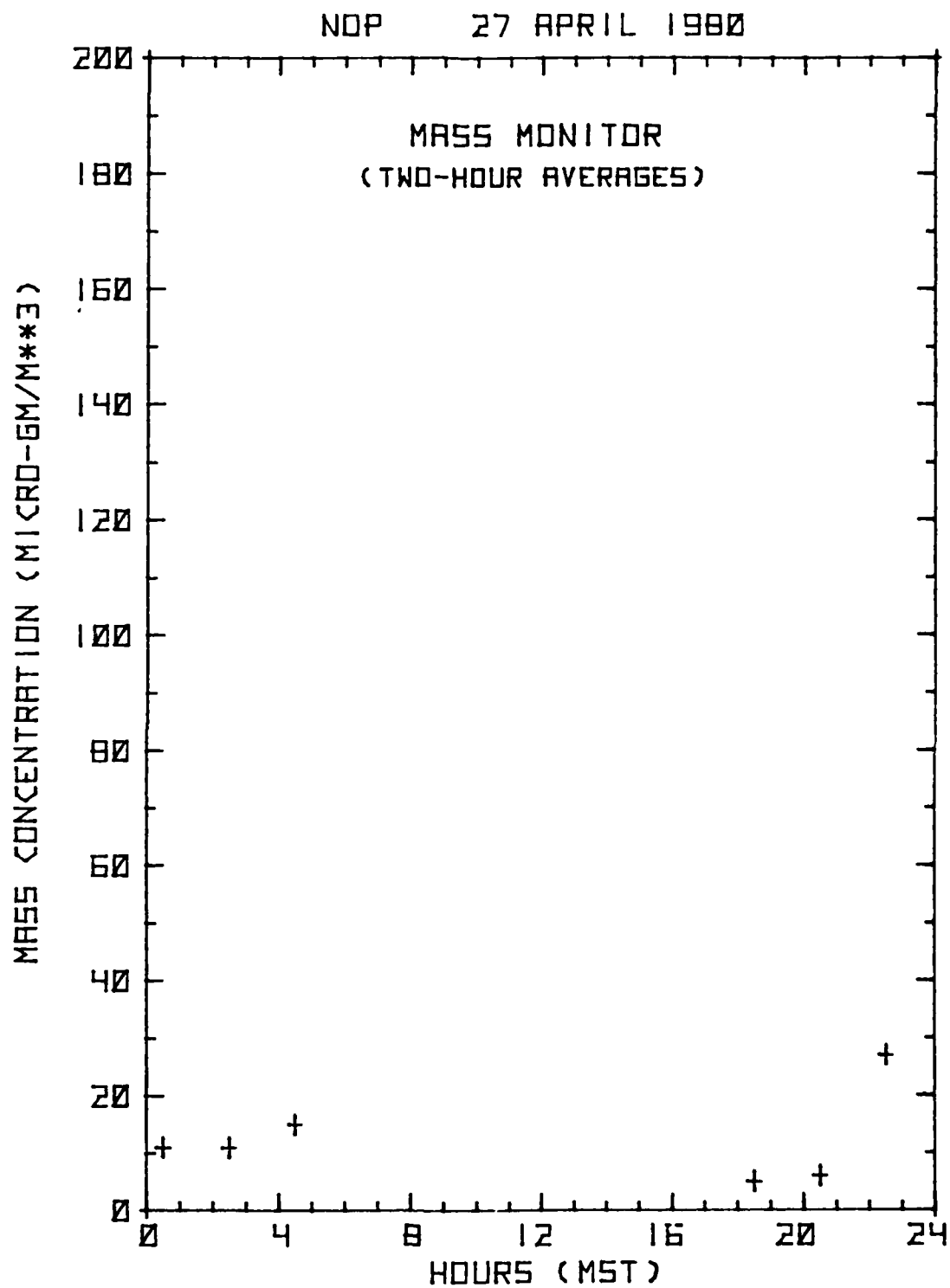


FIGURE A-5.150

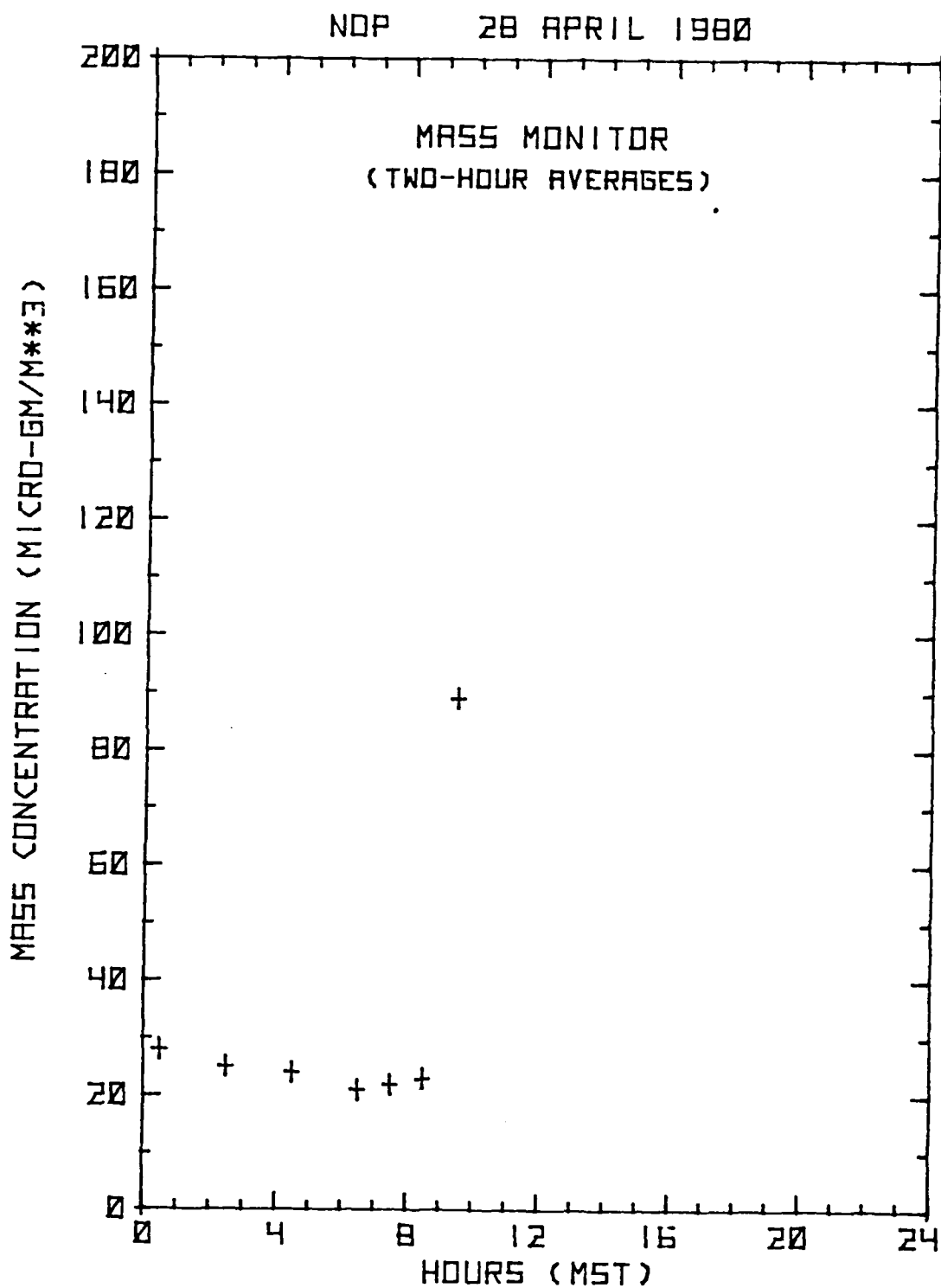


FIGURE A-5.151

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With the possible exception of citizen's band radios, public safety radios will normally be the largest inventory of radio equipment available. Each WER station should be equipped with a portable radio; however, the inventory of mobile radios from public safety vehicles makes them readily assignable to WER stations during at least the most critical, if not all, of the fallout period. Indeed, all public safety staff must take shelter along with all citizens during the fallout period. Local planning will make good use of the public safety resource by urging the respective emergency service chiefs to disperse their staff and communications equipment to assist the communications task for weapons effects reporting or for shelter communications.

Business/Industrial Radio - Licensed under various sections of the FCC Rules & Regulations for the Land Mobile Radio Service, business radio systems are in use by firms in many communities. They are technically similar to public safety radio systems except that they operate on frequencies allocated exclusively for business. Specific system may be owned by the business firm or radio vendor who leases radio service to one or more business users.

Use of business radio systems has the advantage that it does not compete with emergency service traffic. If it is possible to acquire the cooperation of a business to use its radio system to support RADEF, it should certainly be done. Several of the factors of public safety radio systems apply to business radios also. However, use of business radio systems must be capable of supporting the RADEF requirements. Keep the following factors in mind:

- Business radio systems are seldom built to the same performance standards as public safety radio systems. The quality and reliability of these systems may not be comparable to similar public safety systems.
- It is difficult to license a station in the EOC on a business radio system. Availability of the system at the EOC, of course, is essential.
- Be sure the business user is really capable of offering the use of its system. The business user may have need of its radio system to perform emergency operations under contract or at the direction of the EOC. Examine the use of business systems carefully and plan accordingly.

Amateur Radio - Amateur radio may provide extensive communications assistance to civil preparedness activities through the Radio Amateur Civil Emergency Services (RACES) under provision of FCC Rules & Regulations governing the Amateur Radio Service. RACES, where organized to assist civil preparedness, can supply two services:

- A unique ability to provide high frequency (HF or sometimes called shortwave) radio capable of point-to-point long distance communications without the use of remote sites, radio repeaters, or other external hardware. This is an especially useful feature for the local EOC to remain in contact with the State EOC, State area EOC, and the EOC's of neighboring counties. High frequency radio may also have some application from weapons effects reporting stations that are remotely located in the county or for which no other radio system is adequate.
- RACES organization may be able to provide a more local radio service known as two-meter radio. Two-meter radio is technically similar to public safety radio except that it operates on channels reserved to amateur operations. Two-meter radio is capable of meeting requirements for RADEF communications with several considerations.

RACES must be organized and tasked to support civil preparedness within the county. It may be necessary to actively seek out and recruit interested amateurs to organize and participate in a RACES program to support requirements for emergency operations, including RADEF. This must be a continuing effort to accommodate attrition and other losses of RACES personnel. If RACES personnel are recruited to provide RADEF radio communications, be aware that they will represent two added persons at each WER station for 24-hour coverage. This congestion may be relieved by encouraging the RACES organization to train for and accept assignments as radiological monitors for WER Stations.

While we have mentioned only high frequency and two-meter radio equipment for RACES use, amateur radio also has several other radio systems equally usable. These include 10, 6, and 1 1/4 meter radio systems. They are all technically and operationally comparable. The preponderance of amateur activity on high frequency and two-meter makes these systems the most likely to plan for use to support emergency operations including RADEF. If RACES is planned for use, RACES radio equipment must be available in the EOC. Two-meter remote equipment, if used, must be provided emergency power. RACES personnel possess radio equipment suitable for hasty relocation to assigned reporting stations.

Citizens Band (CB) - Citizen's Band is operated under FCC Rules & Regulations governing the Citizens Radio Service. There is no provision in FCC rules that CB will remain in service during a national emergency. Should local plans provide for use of CB in any capacity to support emergency operations, be aware that no sanction covers this activity. However, the very availability of CB makes it a communications resource that should be considered if there are no other practical alternatives.

CB is frequently available in large numbers, both through organized volunteer groups such as REACT, or through outright purchase of equipment to meet local needs. CB equipment may be readily made operable from the

WER stations. However, the small transmit power of CB equipment limits their effective range to about five miles. Each WER station must be tested with the type of CB actually intended for that location to communicate to the EOC. Again, the EOC must be equipped with CB radio equipment in order to use this system. A final limitation of CB, which must be considered in RADEF planning, involves radio discipline. In time of national emergency, there will be little capability to enforce CB regulations. For the many people who have CB radio equipment, it may be their sole method of conversing. Even in the best of circumstances, RADEF use of CB will be but one of many users generating heavy traffic on CB channels. It may be necessary to share these channels or even be at their mercy.

Other Radio Systems - There are a host of radio resources that may be applicable. Indeed, any two-way system of radio communications may be available and pressed into use in an emergency. Marine, aeronautical, military, broadcast, and several other radio services may have a unique application in the community's RADEF communications. The same factors apply as with other systems.

- The system must be available in the EOC.
- Remote sites external to the EOC must have emergency power.
- The system must be realistically field tested from the reporting station to the EOC.
- The reporting station radio equipment must be readily available for use at the station.

EBS - Although not a radio system per se, EBS can be a valuable resource in the EOC. It can be used to provide RADEF as well as other emergency information to the general public in shelters. It could also broadcast general type information to emergency services, etc. Keep in mind though that EBS broadcast would be received by everyone; therefore, discretion should be used in the information broadcast over EBS.

RADIOLOGICAL SUPPORT OF DECONTAMINATION OPERATIONS

Introduction - If this country is subjected to a massive nuclear attack, it is estimated that two-thirds or more of the nation will be blanketed with radioactive fallout. Potentially harmful quantities of radioactive fallout mostly in the form of visible dust particles, will begin to accumulate within hours of the nuclear detonations. Weather conditions such as wind or rain can significantly affect the distribution of these fallout particles. The particles will cover virtually everything, including buildings, land, equipment, and persons who are not under cover. The objective of decontamination is to remove or cover the fallout particles or otherwise reduce radiation exposure to an acceptable level. The objective is to do this with the least amount of labor and materials while limiting the exposure of personnel to a minimum. The guiding principle must always be: Does the expected benefit justify the risk?

Radioactivity cannot be destroyed; however, the fallout hazard may be reduced by:

- Removing radioactive particles from a contaminated surface and safely disposing of them.
- Covering the contaminated surface with shielding material such as earth.
- Isolating the contaminated objects in storage until the radioactivity has decreased through decay.

Decontamination may be partial or complete. Partial decontamination usually involves the rapid, partial removal or covering of contamination to reduce the radiation exposure rate as quickly as practicable to a point where priority work can be accomplished with reasonable safety. Complete decontamination would be accomplished subsequently as required to further reduce the radiation hazard. Actual on-site monitoring is the best way to be certain that decontamination has been effective. Because decontamination procedures are relatively expensive, only the most vital facilities should be selected for this activity. These could include:

- Emergency facilities.
- Communications centers.
- Essential public utilities and related facilities.
- Food processing and distribution facilities.
- Medical facilities.
- Other vital industries.

Developing a Capability - Having a RADEF staff member who has specialized in decontamination would be ideal; however, the RADEF Officer may be required to supervise this function in most jurisdictions. The individual in charge of decontamination operations should be responsible for planning and implementing all decontamination activities. He could be a city engineer, public works engineer, industrial safety supervisor, or other technically qualified person having some administrative capability. He should complete the Radiological Defense Officer training to find out how to develop and implement decontamination plans and operations.

Field supervisors selected for the on-site supervision of decontamination activities should, generally, be people skilled in the supervision of earthmoving and firehosing operations. Decontamination workers (such as firemen, sanitation and construction workers, and their augmenting forces) should be assigned to perform the basic decontamination functions. Persons having special skills applicable to decontamination procedures (bulldozer and heavy equipment operators, etc.) should also be assigned to decontamination operations. The worker should be given a brief orientation on weapon effects and fallout distribution, radiation hazards, and general protection methods. They should be drilled in the application of their specific skills for decontamination operations. They should know the safety rules and procedures so that they will avoid needless entry into hazardous areas.

A means of measuring radiation exposure rates and accumulated exposures should be provided, and individual radiation exposures should be recorded.

Personnel should be instructed concerning the wearing and reading of dosimeters, the allowable exposure for the mission, and reporting of the mission exposure. The person in direct charge of a decontamination operation should examine the exposure records of the decontamination personnel to assure that the calculated mission exposure will not cause any individual to receive a total exposure in excess of established standards.

Decontamination units should have a radiological monitoring capability. The radiological monitors and equipment may be from weapons effects reporting stations, self-protection units or shelters. The monitors should be briefed on acceptable exposure rates, personnel exposures and decontamination levels.

Decontamination Procedures - All decontamination procedures should be delayed as long as possible to allow for decrease in exposure rates due to natural decay. Different procedures must be used for decontamination of various objects. Remember, fallout is radioactive particles. Any procedure that will remove the particles without damaging the object will remove the contamination. Proceed from the simple to more complex procedures.

Personnel Decontamination - Individuals performing emergency functions (such as police, fire, rescue, ambulance services, etc.) will

be directly exposed to both radioactive fallout particles and the radioactivity emitted from these particles. These individuals must exercise precaution to avoid contamination of their person. Personnel contamination may result through carelessness, improper use of protective clothing and equipment, or by accident. Remember that fallout behaves like dirt or dust and would accumulate on the body like any other dirt. Fallout particles can be removed from the exposed body by brushing or by washing.

Land Area Decontamination - Water hoses may be used to wash down radioactive particles from buildings, houses, etc., to reduce the overall level of radiation exposure. This could concentrate the fallout in runoff areas and create hot spots which are highly radioactive and therefore would have to be removed or covered at some time during the postattack recovery period. Contaminated earthen materials can be removed and trucked to isolated areas. Radioactive earth can be plowed, buried, or mounded by bulldozer (bunkered) to serve as a radiation shield to reduce radiation exposures.

Water Area Decontamination - Radioactive fallout particles will settle to the bottom of bodies of water such as ponds, lakes, etc. The water itself will act as a shield.

Most of the radioisotopes will not become dissolved in the water. However, the radioactive iodines, such as $I-^{131}$, may be a special problem especially in drinking water. They tend to dissolve in water and are not removed by normal water processing procedures. Special procedures such as ion exchange are necessary to remove radioiodines. However, the radioiodines decay rather rapidly. If possible, avoid the use of open water sources for drinking water during the first few weeks. Use wells or water stored in closed containers such as holding tanks.

APPENDIX A

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Aerial Monitoring - See Radiological Monitoring.

All-Facility List - A computer printout of facilities which have been surveyed to estimate their fallout protection.

Alpha Particle - See Radiation.

Annex - A section of the Emergency Operations Plan which outlines the operations of a particular emergency function or service.

Attack Phase - See Phases.

Beta Particle - See Radiation.

Bulk Repository - A central storage facility for radiological instruments within a local community.

Calibration - A procedure, utilizing radioactive sources, for establishing the accuracy of radiological instruments.

Citizens Band (CB) - Two-way radio restricted to low power capability and operated on the low frequency transmission band.

Civil Preparedness Guide - Publications of the Federal Emergency Management Agency which describe civil defense programs and provide guidance to State and local civil preparedness director/coordinators for developing programs within their communities.

Community Shelter Plan (CSP) - A plan for sheltering the population within the community (shelter-in-place).

Contaminant (Radioactive) - Radioactive debris (fallout) from a nuclear explosion whose emitted radiation can be harmful to persons if the debris is not removed or covered.

Contamination (Radioactive) - Radioactive material (fallout) deposited on the surface of structures, areas, objects, or persons following a nuclear explosion.

Countermeasures - Protective actions to reduce the effects of nuclear detonations upon the population.

Crisis Relocation - Movement of people on the threat of a nuclear attack to an area less threatened by the direct weapons effects.

Decay - See Radioactive Decay.

Decontamination (Radioactive) - The removal (or covering) of radioactive Contamination from a structure, area, object or person.

Director/Coordinator - The individual who has responsibility for a local civil defense or emergency preparedness program.

Disaster Analysis - A review and determination of the extent of damage suffered by a community from a nuclear attack.

Dosimeter - An instrument used for measuring and registering total accumulated exposure to radiation.

Electromagnetic Pulse (EMP) - Energy in the medium-to-low frequency range, radiated by a nuclear detonation, that may affect or damage electrical or electronic components and equipment.

Emergency Broadcast System (EBS) - A network of AM and FM radio and TV stations linked to State or local EOC's that would remain on the air during an emergency to provide emergency information to the public.

Emergency Communications Development Plan (ECDP) - A documented procedure to meet the communications requirements and capabilities for emergency operations, and used as a planning tool for developing emergency communications capability.

Emergency Operating Center (EOC) - A protected site from which civil government officials can exercise direction and control of operations in an emergency.

Emergency Operations Plan - A documented procedure which describes the local concept of emergency operations, assigns responsibilities for emergency response, and outlines emergency operating procedures. It normally contains a Basic Plan of general applicability, several annexes for more specific operations of services or functions, and attachments, tabs, and SOP's (Standing Operating Procedures) for more detailed operations.

Emergency Phase - See Phases.

Emergency Workers - Individuals who are responsible for life saving or recovery operations.

Essential Industries - The industries that are necessary to provide critical goods and services which would enable the community to survive and recover from a nuclear attack.

Expedient Shelters - See Public Shelters.

Exposure (Radiation) - The total or accumulated quantity of radiation that an individual experiences, usually expressed in roentgens.

Exposure Control (Radiation) - Procedures taken to minimize the radiation exposures of individuals or groups commensurate with the accomplishment of essential survival activities.

Exposure Rate (Radiation) - The amount of radiation to which an individual is exposed per unit of time, usually expressed in roentgens per hour.

Fallout (Radioactive) - Airborne particles containing radioactive material which settle to the surface of the earth following a nuclear explosion; also, the deposition on the surface of the earth of radioactive substances resulting from a nuclear explosion. Early fallout, also called local fallout, is that fallout which settles to the surface of the earth during the first 24 hours after a nuclear explosion; delayed fallout, also called worldwide fallout, is that fallout which settles to the surface of the earth at some time later than the first 24 hours after a nuclear explosion. Early fallout produces most of the fallout radiation.

Federal Communications Commission (FCC) - The Federal agency responsible for the licensing of radio users and control of the Nation's airwaves for radio broadcast.

Gamma Rays - See Radiation.

Home Fallout Protection Survey (HFPS) - A mail survey, conducted in the late 1960's, to identify fallout protected spaces in private homes.

Hot Spots - An area on a contaminated surface where the level of radiation is greater than neighboring areas.

Improvised Shelter - See Public Shelters.

Increased Readiness Phase (IR) - See Phases.

Line Load Control - A procedure which allows telephone companies to disconnect telephone service to all except essential users in a major emergency.

Mobile Monitoring - See Radiological Monitoring.

Mobilization Designee (MOBDES) - A member of the military ready reserve who is assigned to a local, State or Federal civil preparedness office for mobilization.

Mobile Monitoring - See Radiological Monitor.

Monitoring - See Radiological Monitoring.

National Warning System (NAWAS) - The Federal portion of the civil defense warning system used to disseminate warning and other emergency information from the National Warning Center or Regions to warning points in each State.

Normal Phase - See Phases.

Nuclear Attack - Warfare against this country involving the use of nuclear weapons.

Nuclear Regulatory Commission (NRC) - The Federal Agency responsible for the safety of nuclear power facilities and regulation of the possession, use, and disposal of radioactive materials. Formerly a part of the Atomic Energy Commission.

NUDET - A nuclear detonation.

PF CAT - Protection Factor Category. A designation of the relative protection from fallout radiation provided by a facility. There are four official categories as follows: PF CAT X - protection factor of 1 to 9; PF CAT 0 - protection factor of 10 to 19; PF CAT 1 - protection factor of 20 to 39; PF CAT 2-3 - protection factor of 40 to 99, and PF CAT 4 - protection factor of 100 or better

Phases - The various times and operations based on the envisioned environment of a nuclear attack.

Normal Phase - The pre-emergency time frame when there is no abnormal world tensions and normal peacetime day-to-day operations are possible. During this period plans for emergency operations should be developed.

Increased Readiness Phase or Surge Phase - The pre-attack time frame when world tensions are high and crisis preparations for protection of the population and government are undertaken. During this period, civil defense systems are upgraded from the minimum level of operational readiness toward the total preparedness level required by the jurisdiction.

Emergency Phase - The attack phase when nuclear attack is imminent or is occurring. It begins with attack warning and lasts until radiation levels have decreased sufficiently to allow performance of urgent short-term unprotected operations and initiation of post-attack recovery actions.

Recovery Phase - The post-attack time frame when operations are conducted to return the community as nearly as possible to the pre-emergency level. It begins when radiation levels have decreased and unprotected operations are possible and lasts until recovery is complete and the community has returned to near normal operations.

Post-Attack Phase - See Phases.

Protection Factor (PF) - A theoretical value that defines the ratio of the exposure rate from fallout gamma radiation to be expected in a protected location compared to the exposure rate expected with the same amount of radiation in a completely unprotected idealized location. PF values result from calculations that take into account building design, the types of building materials and the locations of the areas within the building. PF values should only be used for planning purposes.

Public Shelters - Facilities which have been surveyed and meet minimum requirements for protecting occupants from fallout radiation.

Expedient Shelter (or Improvised Shelter) - Facilities which are constructed in an Increased Readiness Period to provide fallout and blast protection.

Upgraded Shelters - Facilities which have additional mass such as earth or bricks added to increase their fallout protection.

RACES - Radio Amateur Civil Emergency Service. An amateur radio resource licensed by the Federal Communications Commission to remain on the air during a national emergency in support of civil defense operations. When organized locally, it provides high frequency communications capable of operating over long distances without the use of repeaters or wireline controlled equipment.

RADEF - See Radiological Defense.

RADEF Communications - The communications required within a jurisdiction to link local reporting stations, shelters, and emergency services workers to the local EOC and on to State EOC's for weapons effects reporting and self-protection operations.

RADEF Plans and Annexes - A description of the local plan of action for establishing, maintaining, and operating a RADEF System within the community.

RADEF Program - The means by which RADEF Systems are developed, implemented, exercised, and maintained. It provides the plans, trained personnel, facilities and instruments combined into a complete operational RADEF System.

RADEF Support System - An emergency response capability or group of emergency response capabilities with a common mission. The RADEF Support System should function in an organized manner in an emergency to provide responsible authorities with information on the radiation environment so they can make decisions and initiate actions that will minimize the effects of the radiation hazard. It does this by 1) detection, measurement, evaluation and assessment of the radiation hazard, 2) selective reporting of radiological information to higher authorities, 3) providing guidance on exposure control of personnel and 4) recommending application of appropriate countermeasures.

Radiation (Nuclear) - High-speed particles and electromagnetic radiation spontaneously emitted from the nucleus of unstable (radioactive) atoms.

Alpha Particle - A charged particle of relatively large mass emitted spontaneously from the nuclei of certain radioactive atoms. It can penetrate only the epidermal layer of skin. It is primarily only an internal radiation hazard.

Beta Particle - A charged particle of very small mass emitted spontaneously from the nuclei of certain radioactive atoms. It can penetrate the skin and may cause severe skin and tissue damage. It is both an internal and external hazard.

Gamma Ray - Electromagnetic radiation of high energy originating in atomic nuclei and accompanying many nuclear reactions. It is identical with an X-ray of high energy. It can penetrate dense materials. It is a serious external hazard.

Radioactive Decay - The decrease with the passage of time in the amount of radiation being emitted by radioactive material.

Radiological Defense (RADEF) - A program, including plans, procedures, and systems to monitor, report, and evaluate the radiological hazard resulting from a nuclear attack. It supports preventive and remedial measures to minimize the effect of nuclear radiation on people and resources.

Radiological Defense Officer (RDO) - The principal technical advisor within the Emergency Operating Center on matters pertaining to RADEF.

Radiological Defense Planner (RDP) - The individual responsible for planning and developing the local Radiological Defense System. He may also be the RDO, if trained to operate in the EOC.

Radiological Emergency Response Plan (RERP) - A plan for conducting emergency operations in the event of a peacetime nuclear incident. (NOTE: RERP pertains to peacetime incidents - RADEF pertains to nuclear attack.)

Radiological Monitor (RM) - An individual trained to measure, record, and report radiation exposure and exposure rates, and provide limited field guidance on radiation hazards associated with his assigned operation.

Radiological Monitoring (RAMONT) - The process of utilizing radiological instruments to determine radiation exposure and exposure rates.

Aerial Radiological Monitoring (ARM) - The utilization of aircraft and radiological instruments to acquire radiation exposure rate data on large areas and at or between locations of special interest.

Self-Protection Radiological Monitoring - Monitoring by emergency workers and personnel of essential facilities and industries who must conduct emergency operations under fallout conditions.

Shelter Radiological Monitoring - Monitoring in public shelters to detect, measure, and assess the radiation hazard from fallout.

Mobile Radiological Monitoring - Monitoring operations conducted on foot or by vehicles in areas where specialized knowledge of the fallout situation is required.

Radiological Monitoring Instructors (RMI) - Individuals qualified to train radiological monitors.

Radiological Monitoring Instruments - Special instruments designed to detect and measure radiation exposure rates or accumulated exposure.

Recovery Phase - See Phases.

Remedial Movement - Movement of people following an attack to a less contaminated area or a better protected location.

Reporting Area - A geographic area of a State or County designated for Local-State-National reporting in an emergency.

Roentgen (R) - A unit of exposure to X-ray or gamma radiation.

Self-Protection Radiological Monitoring - See Radiological Monitoring.

Shelter - See Public Shelter.

Shelter Manager - An individual responsible for the operation of a public fallout shelter in an emergency.

Shelter Radiological Monitoring - See Radiological Monitoring.

Standing Operating Procedure (SOP) - A detailed plan covering emergency operational procedures for a facility or activity.

State Instrument Maintenance and Calibration Facility - An operation in each State which is funded 100 percent by FEMA to repair, maintain and calibrate radiological monitoring instruments.

Surge Phase - See Phases.

Survey Meter - A portable instrument used to detect nuclear radiation and to measure the exposure rate.

Vital Facilities - Facilities at fixed locations which are essential to the conduct of emergency operations, National security, or National recovery.

Weapons Effects Reporting (WER) Station - Formerly Fallout Monitoring or Fixed Monitoring Station. A facility with fallout protection, reliable communications, instruments and trained monitors that is designated for the collection and reporting of weapons effects and radiological data to the EOC.

Weapons Effects Reporting (WER) Network - Formerly RADEF Monitoring and Reporting Network. A network of stations strategically located throughout the jurisdiction to provide the local EOC RADEF operation or Disaster Analysis Section with data on weapons effects damage and fallout radiation.

APPENDIX B

REFERENCES

REFERENCES

Standards for Local Civil Preparedness

Civil Preparedness Guide 1-5, April 1978

Attack Environmental Manual

Civil Preparedness Guide 2-1A, June 1972

- Chapter 1 - Nuclear Emergency Operations
- Chapter 2 - Blast and Shock
- Chapter 3 - Fire Ignition and Spread
- Chapter 4 - Electromagnetic Pulse
- Chapter 5 - Initial Nuclear Radiation
- Chapter 6 - Fallout
- Chapter 7 - Shelter Environment
- Chapter 8 - Post-Shelter Environment
- Chapter 9 - Emergency Operations Planning

Radiological Defense Preparedness

Civil Preparedness Guide 2-6.1, April 1978

Radiological Defense Manual

Civil Preparedness Guide 2-6.2, June 1977

Civil Defense Emergency Operations Reporting System

Civil Preparedness Guide 2-10 Series, June 1978

- CPG 2-10/1 System Description
- CPG 2-10/2 Local Increased Readiness Reporting Procedures
- CPG 2-10/3 State Increased Readiness Reporting Procedures
- CPG 2-10/4 Procedures for Developing Weapons Effects Reporting Networks
- CPG 2-10/5 Weapons Effects Reporting (WER) Station Procedures
- CPG 2-10/6 Local EOC Weapons Effects Reporting (WER) Procedures
- CPG 2-10/7 Sample Local Government Operational Situation Reporting Procedures
- CPG 2-10/8 State and/or State Area EOC Reporting Procedures

NCRP Report No. 42, Radiological Factors Affecting Decision-Making in a Nuclear Attack, November 1974, National Council on Radiation Protection and Measurements.

DISTRIBUTION:

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